American Nuclear Society Special Committee on SMR Generic Licensing Issues

Presentation to the Reactor and Fuel Cycle Technology Subcommittee of the Blue Ribbon Commission

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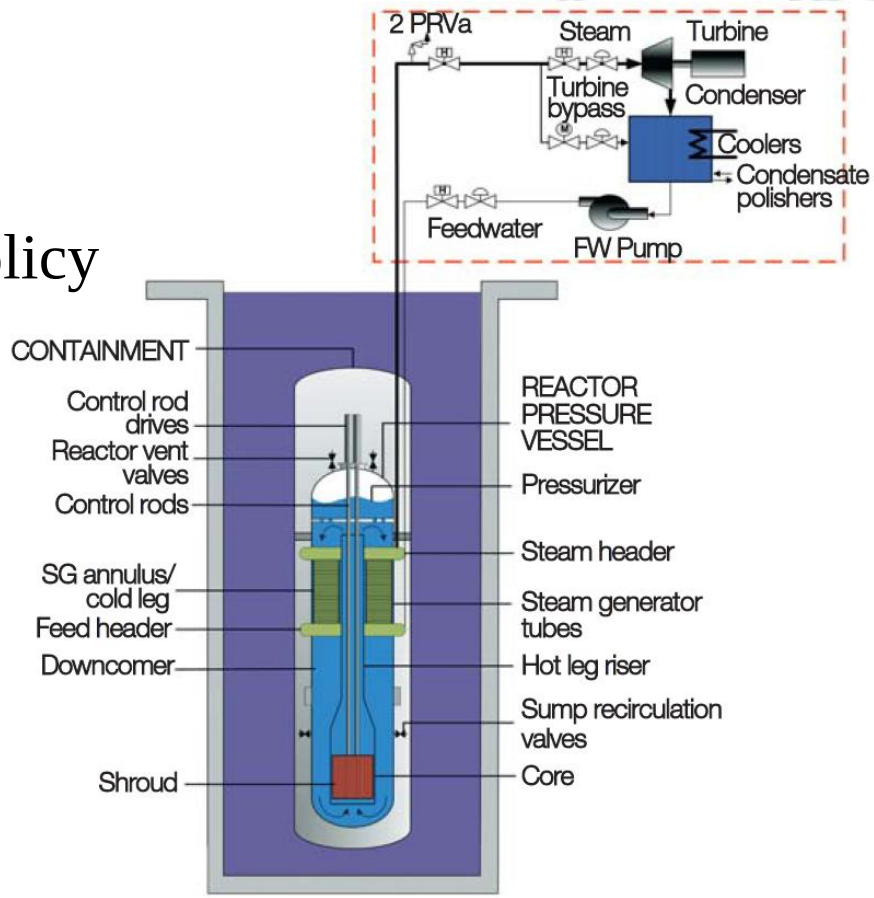
Benefits of Right-Sized Reactors

- SMRs can change social and energy supply paradigms
  - Jobs
  - US based goods and services
  - National Security and energy policy
  - Climate change benefits



B&W mPower Integral Modular Reactor

Licensing Background

- 10 years of evolving dialogue between SMR* reactor designers, project developers and NRC.
- October 2009 NRC SMR workshop:
  - Encouraged dialogue prior to license application.
  - For each issue…" the SMR community should provide a consensus approach"

*For this work SMR is defined as "small and medium sized reactors"

ANS President's Special Committee

- Established by ANS President Tom Sanders to develop solutions to SMR generic licensing issues
- Crosscutting participation from ANS members with every SMR perspective
- Collaborative with NEI, IAEA,EPRI, and DOE SMR programs

SMR Committee is Evaluating Technology-Neutral and Generic Issues

- Emergency Planning
- Passive Safety systems
- ITAAC
- Staffing – Human factors – operational issues
- Physical security –aircraft impact
- Financial Issues – Price Anderson, insurance, financial qualifications, decommissioning
- NRC fee rules
- Applicability of large light water requirements to SMR's
- Non-electrical generation process heat application
- Prototypes - proximity to industrial processes
- Manufacturing licenses
- International codes and standards
- Multi-module facilities
- Risk informed and performance based licensing approaches
- PRA

ANS Committee Charter

- Issue focused
- Gas, water and liquid metal cooled technologies are represented.
- White papers for generic issues in 3 groups:

  A- Licensing Framework.

  B- Licensing Application.

  C- Licensing Design and Manufacturing.

SMR Committee Member Affiliations

- ABS consulting
- AdSTM
- ANL
- Areva
- Bechtel
- B&W
- Individual Consultants
- EPRI
- Excel
- General Atomics
- GEH
- NEI
- NRC
- NuScale
- Hyperion
- IAEA
- INL
- Longnecker and Assoc.
- MIT
- Ogletree Deakins
- Ohio State University
- ORNL
- Pillsbury Winthrop
- PBMR
- Radix
- Sandia
- Shaw
- TerraPower
- Tetra Tech
- UC Berkeley
- Univ. of Wisconsin
- URS
- Westinghouse
- Worley Parsons Polestar

Interim Report of SMR White Papers Issued in August 2010

- Group A- Licensing Framework
  - Staffing
  - NRC Fees
  - Price Anderson
  - Applicability of LWR requirements to SMRs
- Group B -Licensing application
  - Risk informed regulation
  - Physical security
- Group C- Licensing design and manufacturing
  - Manufacturing licenses
  - ITAAC

Regulatory Framework Issues

- Current regulatory system geared toward large LWRs
- SMRs could be licensed using exceptions
  - Not a desirable long term solution
- Risk-informed, technology neutral approach is preferred long term solution
- Changes to regulatory framework will be needed
  - Rule making
  - Legislative changes

Financial Issues

- Smaller electrical output of SMRs will emphasize importance of financial regulations
- Price-Anderson
  - Need equitable approach for insurance for smaller plants
- NRC Fee Schedule
  - Sliding scale recommended, rather than fixed fee

Manufacturing Issues

- Regulations need to address new business model
  - Factory fabrication versus site construction
- Manufacturing license
  - Need to align regulations with realistic business model
  - Export issues need to be addressed as well
- Inspection and acceptance process
  - Need ITAAC process defined for factory fabrication

Summary

- ANS Special SMR Committee provides a unique opportunity to bring **ANS members** together from **all sectors** of the SMR community to develop informed options for dealing with the **generic licensing issues**
- Interim report issued in August 2010, and committee work will continue through June 2011